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10/614,120	07/08/2003	Su-Hyun Kim	Q75389	6052

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EXAMINER

TRAN, CON P

ART UNIT

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2615

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/614,120

Applicant(s)

KIM, SU-HYUN

Examiner

Con P. Tran

Art Unit

2615

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 1/26/05, 3/6/06
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Priority

1. Acknowledgment is made of Applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. REPUBLIC OF KOREA 2002-39297, filed on July 8, 2002.

Claim Objections

2. Claims 1, 12, and 15 are objected to because of the following informalities:

Regarding claim 1, it appears to the examiner that the transition term missing. For purpose of examination, examiner interprets claim 1 is an open-ended claim.

Claim 12, equations in lines 4 and 5 having identical symbols on both sides of the equations.

Claim 15 recites the limitation " the signal (sound)" in lines 12, 13, and 14. There is insufficient antecedent basis for this limitation in the claim.

Appropriate correction is required.

Specification

3. The disclosure is objected to because of the following informalities: On page 12, equation 3 having identical symbol (L) on both sides of the equation.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. **Claims 1-2, and 19** are rejected under 35 U.S.C. 102(e) as being anticipated by Asakura et al U.S. Patent 6,681,018 (hereinafter, "Asakura").

Regarding **claim 1**, Asakura teaches a method for reproducing multi-channel stereophonic sound (col. 2, lines 45-49; see 7L, 7R, 7C, 7SW, 7SL, and 7SR, Figs. 1, 3, and respective portions of the specification; col. 10, lines 21-29) by which sound output through a plurality of additional channels (front channel, headphone 8, Fig. 3) in a multi-channel stereophonic sound system is reproduced by using a signal of a left stereo channel (L), a signal of a right stereo channel (R), and a signal of a center channel (C, Fig. 3; col. 2, lines 50 - col. 3, line 11; col. 8, line 59 – col. 9, line 5).

Regarding **claim 2**, Asakura teaches the method of claim 1, wherein the multi-channel stereophonic sound system is a 5.1-channel stereophonic sound system and

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the plurality of additional channels use speakers of a TV set or a stereo audio system (col. 5, lines 48-50).

Regarding **claim 19**, this claim merely specifies a program necessary for performing to method claim of claim 1 and is therefore interpreted and rejected for the same reasons.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. **Claims 3-9, 10-11, 13-14, and 15-18** are rejected under 35 U.S.C. 103(a) as being unpatentable over Admitted Prior Art (hereinafter, "APA") in view of Cohen et al. U.S. Patent Application 2003/0031333 A1 (hereinafter, Cohen).

Regarding **claim 15**, APA teaches an apparatus for reproducing multi-channel stereophonic sound (see Fig. 2, Specification pages 7-8, [27, 28, 29]), the apparatus comprising:

a compressed audio data inputting unit that receives and stores compressed audio data (received by Dolby digital sound; Specification page 8, [28]);

a decoder that decodes the compressed audio data into PCM audio data based on the encoding format of the compressed audio data (5.1-channel decoder; Specification page 8, [28]);

Dolby digital sound produces a multi-channel sound (5.1-channel sound, Fig. 2; Specification page 8, [28]) that produces sound output to a center channel (230), a left stereo channel (220), a right stereo channel (240), a left surround channel (270), a right surround channel (280), and a low frequency enhancement channel (LFE, see Fig. 2) using the decoded PCM audio data (Specification pages 7-8, [27, 28]);

a TV speaker (of TV set 210, see Fig. 2) that produces an output of a left speaker of a TV set (Ltv 250) and an output of a right speaker of the TV set (Rtv 260) using signal of the left stereo channel (L), the signal of the right stereo channel (R) and signal of the center channel (C) produced by the multi-channel sound producer (see equations Ltv and Rtv, Specification page 2, [02]; page 8, [28]; it is noted the claim does not exclude the presence of left surround Ls and right surround Rs; Ltv and Rtv together using L, R, and C); and

a multi-channel TV speaker output (Specification page 2, [02]) that produces the signals of the left stereo channel and the right stereo channel (see Figs. 1, 2).

However, APA does not explicitly disclose to produce the signals of the left stereo channel and the right stereo channel based on the positions of speakers of the left and right stereo channels.

Cohen discloses a system and method for locating the position of the listener and the position of the speakers within a sound environment in which selecting a listener sweet spot within said listening space; electronically determining the distance between said sweet spot and each of said speakers, and operating each of said speakers with respect to intensity, phase and/or equalization in accordance with its position relative to said sweet spot ([0013]; see Figs. 1, 2, 12; [0056, 0057, 0061, 0062]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the system and method for locating the position of the listener and the position of the speakers taught by Cohen with the apparatus for reproducing multi-channel stereophonic sound of APA such that to produce the signals of the left stereo channel and the right stereo channel based on the positions of speakers of the left and right stereo channels as claimed for purpose of providing the best possible audio experience to the listener, as suggested by Cohen in paragraph [0014].

Regarding **claim 16**, APA in view of Cohen teaches the apparatus of claim 15. Cohen, as modified further teaches wherein the TV speaker output producer being capable to: increases output (sound) components of the left stereo channel and decreases output (sound) components of the center channel as the output of the left

speaker of the TV set is smaller than the output of the left stereo channel and the left speaker of the TV set is located closer to the left stereo channel; and

increases output (sound) components of the right stereo channel and decreases output (sound) components of the center channel as the output of the right speaker of the TV set is smaller than the output (sound) of the right stereo channel and the right speaker of the TV set is located closer to the right stereo channel (i.e., means for manipulating each sound track of said multi-channel sound signals with respect to intensity, phase and/or equalization, according to the relative location of each speaker in order to create virtual sound sources in desired positions [0012]; processor 35, Fig. 11 manipulates the multi-channel sound track according to the measurement results, using HRTF parameters with respect to intensity, phase and/or equalization along with prior art signal processing algorithms [0056]).

Regarding **claim 17**, APA in view of Cohen teaches the apparatus of claim 15. Cohen, as modified further teaches wherein the TV speaker output producer being capable to produce the output (Ltv) of the left speaker of the TV set using one of equations 1 and 2 and the output (Rtv) of the right speaker of the TV set using one of equations 3 and 4:

$$Ltv=0.7*\{a*L+(1-a)*C\} \quad (1)$$

$$Ltv=0.7*\{(0.3+a)*L+(1-a)*C\} \quad (2)$$

$$Rtv=0.7*\{a*R+(1-a)*C\} \quad (3)$$

$$Rtv=0.7*\{(0.3+a)*R+(1-a)*C\} \quad (4)$$

wherein, L, R, and C represent the signal output from the left stereo channel, the signal output from the right stereo channel, and the signal output from the center channel, respectively, and "a" is a constant that is obtained by dividing a distance between the right speaker of the TV set and the right stereo channel by the sum of a distance between the right speaker of the TV set and the right stereo channel and a distance between the right speaker of the TV set and the center channel (see Figs. 1, 2, 12; [0056, 0057, 0061, 0062], i.e., means for manipulating each sound track of said multi-channel sound signals with respect to intensity, phase and/or equalization, according to the relative location of each speaker in order to create virtual sound sources in desired positions [0012]; processor 35, Fig. 11 manipulates the multi-channel sound track according to the measurement results, using HRTF parameters with respect to intensity, phase and/or equalization along with prior art signal processing algorithms [0056]; location of any speaker 33 in space, Fig. 10; [0055]).

Regarding **claim 18**, APA in view of Cohen teaches the apparatus of claim 15, APA, as modified further teaches wherein the compressed audio data is encoded using one of a Dolby digital sound method, a digital theatre system method, and an advanced audio coding method (i.e., Dolby digital sound; see Specification page 8, [028]).

Regarding **claims 3-9**, method claims 3-9 are similar to claims 15-18 except for being couched in method terminology; such methods would be inherent when the

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structure is shown in the references. It is noted Cohen being capable to manipulate intensity, phase and/or equalization, and position of speaker [0012, 0055].

Regarding **claims 10-11, and 13-14**, method claims 10-11, and 13-14 are essentially having the same scope and content for reproducing multi-channel stereophonic sound similar to apparatus claims 15-18 except for being couched in method terminology; such methods would be inherent when the structure is shown in the references. In addition, Cohen discloses woofer in paragraph [0051].

8. **Claims 12** is rejected under 35 U.S.C. 103(a) as being unpatentable over Admitted Prior Art (hereinafter, "APA") in view of Cohen et al. U.S. Patent Application 2003/0031333 A1 (hereinafter, Cohen), and further in view of Endoh et al. U.S. Patent 6,016,295 (hereinafter, Endoh).

Regarding **claim 12**, APA in view of Cohen teaches the apparatus of claim 10. However, APA in view of Cohen does not explicitly disclose wherein in step (d), the output L of the left stereo channel and the output R of the right stereo channel are calculated using the equations below:

$$L=0.7*L+0.3*L_s$$

$$R=0.7*R+0.3*R_s$$

wherein, L_s and R_s represent the signals output from the left surround channel and the right surround channel, respectively.

Endoh disclose method for reproducing audio signals (col. 3, lines 4-6) in which the left output channel L_o and right output channel will output the following in col. 36, lines 15-25:

$$L_o = L + 0.7 \cdot C + 0.7 \cdot L_s$$

$$R_o = R + 0.7 \cdot C + 0.7 \cdot R_s$$

It is noted the claim does not exclude the presence center channel.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the method for reproducing audio signals taught by Endoh with the apparatus for reproducing multi-channel stereophonic sound of APA in view of Cohen such that Cohen, as modified, being capable to manipulate intensity, phase and/or equalization, and position of speaker (see Cohen, [0012, 0055]) to obtain the output L of the left stereo channel and the output R of the right stereo channel as claimed for purpose of being enable the reproduction of special use according to the user's liking, as suggested by Endoh in column 36, lines 54-56.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Con P. Tran whose telephone number is (571) 272-7532. The examiner can normally be reached on M - F (8:30 AM - 5:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor Vivian C. Chin can be reached on (571) 272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

cpt CPJ
February 19, 2008


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SUPERVISORY PATENT EXAMINER